

inclination towards suicide we shall speak in the following section; and then the true professionals, tradespeople, and all those reckoned in the vagrant professions." The statistics with regard to the military are remarkable. Thus in Prussia the average suicide over the whole male population is 394 per million, while in the army it rises to 600 or 620. In Austria the proportion is still higher, viz. 866 per million as against 122 of the civil population, and in the Belgian army the case is nearly as bad. In the English army from 1862-71 the suicidal tendency was more than triple that of the male civilian population. "This tendency, moreover, augmented as time advanced; from 1862-71 it grew from 278 per million to 400, and even reached 569 in 1869. The tendency increases with the sending away the troops from Europe, so that in the kingdom (*at home*) the number is 339 per million, but in the English possessions in India it rises to 468." Of the different sections of the British army members of the cavalry are most addicted to suicide (in one year the percentage among the dragoons being as high as 785 per million), next the artillery, then the infantry, foot-guards, engineers, and lastly the household cavalry.

Analysis of the motives which lead to suicide shows this as a general result:—"In man the manifestation of personal interest rules in [almost] every case, and as only a fourth or fifth of the suicides are committed by women, the already small proportion of those which are due to noble and generous motives becomes still more attenuated."

Concerning the methods and places chosen by suicides,

"Each country certainly has its peculiar predilections, but in the aggregate of the peoples by whom suicide is practised, the rope appears to be chosen before every other instrument, and immediately after that water (both giving 5-10ths to 8-10ths of cases); firearms follow; then those arms which cut or stab; falling from a height is preferred to charcoal and poison; and lastly come all the other means."

Hanging stands in inverse ratio to drowning. For in Italy and other countries where hanging is most rarely resorted to, drowning is most common, while in Russia, where hanging is the favourite mode (four-fifths of all the suicides) drowning is very rare (hardly 6.9 per cent.). Firearms are preferred in the South of Europe and by the military everywhere, while in England poison and throatcutting are most favoured. It is curious that "there is a constant difference between the sexes in falls from heights and crushing under railway trains, the former being proportionally more frequent among women, the latter, on the contrary, much more so amongst men." There are other "sexual divergences" of the same kind, and as showing the combined influence of sex and age we may quote one other passage:—

"Males under 15 years of age choose hanging (86 per cent.), and women choose drowning (71 per cent.); in the ages between 15 and 20 the same predilection of the two sexes continues, but it lessens (hanging amongst males is 72 per cent.; drowning among women 65), and it grows still less between the ages of 20 and 30. With the diminution of the tendency towards hanging, that towards drowning increases amongst the men, the greatest number of deaths by this means falling between the ages of 40 and 50; but in advanced age the old people return to a preference for hanging, even more than children (91 per cent.)."

The book concludes with a short "Synthesis," which leads to the proposition that "Suicide is an effect of the struggle for existence and of human selection [*i.e.* natural selection operating in the human species], which works according to the laws of evolution among civilised people." From the present sketch it will be seen that the work as a whole contains many facts of interest to sociologists, although to the rest of the world its somewhat repulsive details will appear useful only as showing the practically emphatic answer which sundry classes of the community respectively give to the question "Is life worth living?"

GEORGE J. ROMANES

OUR BOOK SHELF

Catalogue of the Phanogamous and Vascular Cryptogamous Plants of Michigan—Indigenous, Naturalised and Adventive. By Chas. F. Wheeler and Erwin F. Smith. (Lansing: George and Co., 1881.)

THIS excellent contribution to the flora of the United States has been compiled at the suggestion of the State Horticultural Society of Michigan. It is prefaced with a list of the various catalogues, from that by Dr. Jno. Wright, embracing 850 species, and published in 1839, to that of Dr. Palmer in 1877. With reference to its flora the Peninsula may be roughly divided into two great divisions—the hard wood and the soft wood-lands—one representing the Appalachian flora, the other the Canadian. The hard-wood country lies south of latitude 43°, and consists of very fertile sand, clay, or loam, mostly cleared of the original forest and largely cultivated. The upper Peninsula has a much colder climate than that of the lower Peninsula, and its flora is in many respects decidedly northern. Pines, fir, cedar, larch, elms, poplars, maples, and birch, are among the principal trees; the proximity of the great lakes exerts a marked influence on equalising the temperature, and the effects thereof are well seen. Trees like *Liriodendron tulipifera*, *Cercis canadensis*, *Gleditsia triacanthos*, *Cornus florida*, and *Morus rubra*, which belong to Ohio and Central Illinois, have crept northward, favoured by the mild influence of the lake winds through the central and western part of the Lower Peninsula often beyond the middle. The flora as detailed shows 1634 species. The composites claim the larger number of species—182—about one-ninth of all. Sedges follow with 176 species; Grasses, 139; Rosaceæ, 61; Leguminosæ, 55; Scrophulariaceæ, 46; Umbelliferae, 27. Of the 165 species of trees and shrubs about twenty are valuable for their timber. About twenty species of woody and herbaceous native climbers are frequent, and some seem worthy of cultivation. The arrangement followed is that of the fifth edition of "Gray's Manual," and a coloured map of Michigan is annexed.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Pendulum Observations in London

THE reference by the President of the Royal Society in his recent annual address to the subject of "contemplated pendulum operations permits me to assume that enough interest exists in those operations to render the offer which I now wish, with your kind assistance, to make, not altogether inopportune. I am now engaged in swinging pendulums, in London, under conditions

which enable me to invite any person who may wish to make themselves acquainted with the *modus operandi* by actual inspection, to come and witness the same. The only formality I would impose is the communication of the visitor's card and address, and a few hours' notice, in case the intended visit should promise to be inopportune. To reduce the likelihood of this I would intimate that the regular observations are made (in the present case) within about half an hour before and after the hours of six and twelve, morning, noon, evening, and midnight, during which the attention of the observer may be understood to be entirely preoccupied. At any other hour of the day or night, either I or my assistant will be desirous of explaining to the best of our ability whatever may be needful.

My reasons for making this offer so publicly are, in the first place, entirely scientific. I wish to give those who are curious on the subject a fair opportunity, and I hope to derive information or suggestions from those whose attention is for the time engaged in comprehending the details by means of which the general result is sought to be obtained. Beyond this, I am also desirous of obtaining some indications as to the degree of interest actually existing in England on the subject of gravity-measures of this kind.

The present site has a peculiar interest. It is a cellar which I have been lucky enough to find very near the desired spot—which is that which was occupied in the early part of this century by Kater, Sabine, Foster, and others; but was afterwards necessarily abandoned on the decease of Mr. Browne, of Portland Place, whose house was the *rendezvous* of those observers. It was in consequence of this abandonment that the intention was formed of founding a more permanent central point of reference; and as the establishment of a magnetical observatory at Richmond was at that time under consideration, the transfer of what may be called the English home of pendulum investigations from Portland and Tavistock Places to the new Richmond (or "Kew") Observatory was decided upon, and accordingly when next pendulum experiments were instituted, their site was in the Richmond Observatory. It is only recently, however, that the necessity of ascertaining the physical relation between the two sites has become a practical one.

Something of the same sort had been experienced in the earlier days, when, partly owing to Greenwich Observatory having formed the base or *point d'appui* on English soil, of one or two foreign series of operations; partly because of the obvious anomaly of having the principal English pendulum station in a private house; special observations were instituted for determining the relation of that site to the Greenwich one. Greenwich was thus incorporated on the one hand with those series which depended on the Portland Place site, while the latter was connected with those dependent (if one may use the term where all are mutually dependent) on the Greenwich site. They were all, in fact, to a certain extent linked together.

This should explain why re-observation at Greenwich, in connection with re-observation at Kew, seems likely to meet the present want best if supplemented by re-observation also at, or very near, the old Portland Place site. I have made the requisite observations (subject to some doubt) at Kew, *i.e.* at the Richmond Observatory, and at Greenwich Observatory, and I am now doing the same in the cellar above referred to, as representing Portland Place. Its exact situation is immediately in rear of All Souls' Church, Langham Place.

The Kew (or Richmond) Observatory is not a very convenient place for observations of this nature. They require attendance at all hours, whereas the observatory is situated so far from the inhabited part of Richmond as to permit of such attendance only at great personal inconvenience.¹ Also, though a precise knowledge of time is of the first importance, the absence of telegraphic communication with Greenwich Observatory and the distance from the nearest telegraph station combine at Kew to make one dependent on local transits. This is of itself a very serious objection. If to this we add that the pendulum-room at the Kew Observatory is too small to allow of the introduction of any portable stand or framework such as must of necessity be used on voyages—the very restricted space being permanently occupied by a fixed support, which does not admit of the same dispositions as would be made elsewhere for convenient observations, it remains a serious question whether Kew ought to continue to be regarded as the fundamental English pendulum station. There can be very little doubt, having regard to the

¹ I estimate that I walked fully 200 miles to and from my work, in all weathers and at all hours, while carrying on the observations at Kew in September and October last.

paramount importance of *time* in pendulum experiments, that the fundamental station should have a perfect command of that element, such as can rarely be obtained except at a fixed astronomical observatory.

At the Langham Cellar, after due consideration, I have concluded to rely on Greenwich alone for time; sending a chronometer for the purpose every day. So far, the plan seems to be quite satisfactory, being more reliable than noting a transmitted signal at the nearest post-office.

Although I do not think I have touched on any point in this letter which is not closely connected with its primary object, I must nevertheless apologise for its length. In conclusion I have now only to repeat the offer with which I commenced it, that any one interested in, or desirous of becoming practically acquainted with pendulum swinging of this particular kind, may, at any time within the next fortnight, visit and inspect the apparatus in action, by communicating with me, at the address here given.

J. HERSCHEL

1, Langham Street, Portland Place, W., December 28

Dante and the Southern Cross

"... vidi quattro stelle
Non viste mai fuor ch'alla prima gente."

Purg. i. 23.

No one will accuse me of excessive patriotism when I say that Dante was one of the very few chosen spirits of the fourteenth century who were thoroughly acquainted with all natural phenomena, so far as they were then known and understood, whilst he was perhaps the only one who manifested a decided contempt for all the pretensions of astrologists and necromancers (*Inf.* xx.). The words of such a man are deserving of the best consideration, alike of literary and scientific men; it is therefore to be hoped that before the discussion ends those best qualified to speak will throw more light on the lines in question.

As yet in answer to the query which appeared in *NATURE* (vol. xxv. p. 152), we have only had a quotation of a well-known passage from Humboldt's "*Cosmos*," and the suggestion that Dante must have derived his knowledge of the Southern Cross—evidently indicated in the lines at the head of this note—from Arabian Globes—a suggestion which, by the way, is expressed, or clearly implied, in the "*Cosmos*," within a page from the passage quoted. As to the remark with which both Mr. Walker and Mr. Wilks end their notes (*NATURE*, vol. xxv. p. 173) that "*prima gente*" does not refer to Adam and Eve, but to the early races which inhabited Europe and Asia, though not new, it is obviously correct to the mind of those who know how great was the cosmographic knowledge of Dante. Yet, as Count de St. Robert states in an ably-written pamphlet on the point in question (Torino, 1866), strange to say, Humboldt (who has so unhesitatingly stated the opinion of Dr. Galle that in 52° 30' north latitude in consequence of the precession of the equinoxes, the Southern Cross might have previously reached more than 10°, and that it began to become invisible in that latitude 2900 years before Christ), believed that "*prima gente*" referred to our first parents.

Now, whilst admitting as possible that Dante obtained his knowledge of the stars which form the Southern Cross from the catalogue of Ptolemy (*Almagest*, Book vii.), on reading the passage, in which occur the two lines quoted above, especially in the original, one is irresistibly brought to think that Dante's enthusiastic description of the "*quattro stelle*" was inspired by the vivid description of a Christian witness of the glorious spectacle. The person most likely to have imparted such knowledge to the great poet was Marco Polo. That celebrated Venetian traveller returned from his last voyage in 1295, and lived in his native town till 1324 (Col. Yule, "*The Book of Ser Marco Polo*"). Dante did not visit Venice till 1320, after he had finished his "*Divina Commedia*," but there are many reasons for the belief that the two great men met or corresponded together.

With regard to the lines:—

"... quelle tre facelle,
Di che 'l polo di qua tutto quanto arde."

Purg. viii. 89.

which Dante says were high when the "*quattro stelle*" were low, it is difficult to agree with any of the commentators, because neither the Magellanic clouds, nor Achernar, nor any three prominent southern stars, correspond satisfactorily to the "*tre facelle*" alluded to. It must not be forgotten that accurate